ENVIRONMENTAL MANAGEMENT COMMISSION
AIR QUALITY COMMITTEE MEETING SUMMARY
July 11, 2018
Archdale Building-Ground Floor Hearing Room
10:30 AM - 11:15 AM

MEETING BRIEF

During their July 11, 2018 meeting, the Air Quality Committee (AQC) of the Environmental Management Commission (EMC):

- Postponed hearing the Group 4 rule package until the September 12, 2018 meeting since the Division of Air Quality (DAQ) inadvertently omitted a reference to a 2017 Session Law and requested time to thoughtfully consider preliminary feedback from the Rules Review Commission (RRC).
- Received an update on GenX sampling methods and emissions in North Carolina.
- Provided comments for DAQ staff to consider as they continue to study and monitor GenX and other emerging contaminants in North Carolina.

AQC MEMBERS IN ATTENDANCE	
Dr. Stan Meiburg, AQC Chairman	Dr. Suzanne Lazorick
Mr. Charles S. Carter, AQC Vice Chair	Mr. George H. Pettus
Ms. Julie Wilsey, EMC Vice-Chair	Ms. Marion Deerhake

OTHERS IN ATTENDANCE	
Mr. John D. Solomon, EMC Chair	Mr. Philip Reynolds, EMC Counsel
Ms. Shannon M. Arata, EMC	Mr. Mike Abraczinskas, DAQ Director
Mr. David W. Anderson, EMC	Mr. Michael Pjetraj, DAQ Deputy Director
Mr. Charles Elam, EMC	Members of the public
Mr. Bill Puette, EMC	DAQ Staff
Dr. Albert R. Rubin, EMC	

PRELIMINARY ITEMS

Chairman Meiburg welcomed Commissioner Pettus as a new member of the Air Quality Committee.

Agenda Item #1, Call to Order and the State Government Ethics Act, N.C.G.S. §138A-15(e)
Chairman Meiburg called the meeting to order and inquired, per General Statute §138A-15(e), as to whether any member knows of any known conflict of interest or appearance of conflict with respect to matters before the Environmental Management Commission's Air Quality Committee. No conflicts were identified.

Agenda Item #2, Review and Approval of the May 9, 2018 Meeting Minutes
Chairman Meiburg noted that the DAQ had a slight oversight in not posting the May 9, 2018 minutes until the day prior. He also specified that it was assumed other members of the committee had an opportunity to review them since he was emailed a copy in a timely manner. The final copy of the minutes was reviewed by the Chairman and he believed they were acceptable. He granted the AQC an opportunity to delay approval of the minutes since many members did not have a significant amount of time to review them. Commissioner Deerhake specified that she had time to review the minutes and noted a minor typographical error. The typographical error was not cited so no changes were made. Chairman Meiburg asked for a motion to approve the May 9, 2018 minutes. Commissioner Deerhake made a motion to approve the minutes and Commissioner Wilsey seconded. The minutes were unanimously approved.

RULEMAKING CONCEPTS

None.

DRAFT RULES

Agenda Item #4, Request Approval to Proceed to EMC for Public Comment and Hearing on Readoption of Group 4 Rules – 15A NCAC 02D .0540, .1800 – .1808, .1900 – .1907 (546) (Joelle Burleson, DAQ)

Discussion: Chairman Meiburg specified that this agenda item would be unexpectedly withdrawn from the July 11, 2018 AQC meeting. Afterwards, he gave the floor to Director Abraczinskas to explain the technical details. Director Abraczinskas stated that the DAQ received preliminary feedback earlier that week from the RRC in the form of a "pre-review". The pre-review contained 17 pages of technical comments, which the DAQ would like to thoughtfully consider before presenting draft rules to the AQC. Next, the DAQ inadvertently omitted references to a 2017 Session Law impacting one of the odor rules. The Session Law explicitly exempts a certain type of operations from one rule, and the DAQ prefers to properly present their recommendations to the AQC with a PowerPoint. There's also a policy issue in the Session Law granting the Commission authority to determine criteria for which the exemption should remain in place. Delaying the Group 4 rules until the September 2018 AQC meeting will not alter the long-term readoption schedule.

Chairman Meiburg asked for clarification pertaining to when the rules would be brought back to the Committee. Director Abraczinskas specified that the Group 4 package would be brought back to the Committee for their September 2018 meeting. The Group 4 package set forth before the Commission will be brought back in September 2018 with a few additional edits and tweaks.

EMC Chairman Solomon noted that he was made aware of this issue the late in the prior day and the AQC Chairman was likely made aware the morning of the AQC meeting. He specified that his fellow Commissioners have a lot to read to prepare for the meetings, but believes it's prudent to withdraw and correct the rule package.

Motion: No motion required.

INFORMATIONAL ITEMS

Agenda Item #5, Update on GenX Air Emissions from Chemours Facility (Michael Abraczinskas and Michael Pjetraj, DAQ)
Deputy Director Pjetraj presented the update for actions the DAQ is taking on GenX and the Chemours facility since March 2018. The current presentation will incorporate details from the previous presentation but will focus on accomplishments since March.

GenX, also termed C3 dimer acid ($C_6HF_{11}O_3$), is the trade name for an unregulated anthropogenic chemical primarily used to manufacture nonstick coatings. Historically, the former DuPont facility began chemical manufacturing in 1971 along the border of Cumberland and Bladen Counties. Around 1980, the facility began manufacturing products with fluorinated compounds. Commercial GenX manufacturing began after a 2009 Consent Agreement was signed by the United States Environmental Protection Agency (EPA) and Dupont pursuant to the Toxic Substances Control Act (TSCA) as a replacement for perfluorooctanoic acid (PFOA). GenX is also produced as an intermediary during other manufacturing processes at the facility and may have been present in the environment prior to 2009. It is important to note that the facility later transitioned its site ownership to Chemours.

The emerging contaminant issue began with measurements of perfluorinated compounds in the Cape Fear River Basin. The preliminary focus for the measurements was on surface and groundwater quality. However, the DAQ speculated atmospheric deposition to be the probable culprit for GenX materials appearing across the river and in groundwater samples upgradient from typical groundwater flows.

The DAQ conducted atmospheric deposition modeling associated with the initial emission estimates provided by the facility to indicate where GenX emissions may have deposited. The DAQ's atmospheric deposition modeling results were not matching the distance to groundwater wells containing contamination. This caused the DAQ to question whether the emissions estimate initially provided by the facility were correct. It is important to note that the initial estimates provided by the facility were based on a chemical process model. Part of the DAQ's questioning required the facility to conduct emissions testing and develop test methods to measure GenX. Test method development is an intricate and laborious process; however, Chemours developed within a short period of time and began source testing at their Fayetteville facility in January 2018. A summary of their completed (Table 1) and future (Table 2) testing for GenX is below. Please note that the facility installed two carbon beds to control emissions. One carbon bed controls emissions from the polymer processing aid (PPA) process for both room and process air. The other carbon bed controls room air for associated with the vinyl ethers (VE) north process. As the carbon beds are installed, control efficiency testing must be performed.

Table 1. Completed Testing

Week of	Chemical Process of Interest
January 8, 2018	PPA and VE North
January 22, 2018	PPA and VE North
February 26, 2018	PPA and VE South
March 19, 2018	VE North, Polymers, and Semiworks
April 3, 2018	VE South and VE North for Hexafluoropropylene Oxide (HFPO)
April 23, 2018	VE North for HFPO
May 14, 2018	Polymers for E1
June 11, 2018	PPA and VE North Carbon Bed

Table 2. Future Testing

Week of	Chemical Process of Interest
July 16, 2018	PPA Scrubber Efficiency for the VE North Carbon Bed and Scrubber
July 23, 2018	PPA Scrubber and Carbon Bed Efficiency

The DAQ's investigation involving GenX and other per-and polyfluoroalkyl substances (PFAS) started with emissions estimates. The original emissions estimates reported to the DAQ in 2016 was 66.6 lb/year, and was later revised by Chemours in October 2017 to 594 lb/year. The DAQ estimated emissions to be 2758 lb/year by factoring the following: (1) source testing conducted in the spring of 2018; (2) hours of production; (3) different processes; (4) different batches; and (5) the number of operating hours for each batch.

The Department and the DAQ have conducted approximately five public listening sessions in Bladen, Cumberland, and Robeson counties. The Department and the DAQ want to be transparent, engage with the public, inform the public, and answer questions pertaining to GenX.

After analyzing initial deposition modeling, the DAQ required more information pertaining to actual source test emissions and ambient measurements. Ambient measurements are extremely difficult for a perfluorinated compound that may react or stick to sampling equipment, may have biases with glassware, and is in low concentrations. Conversations with the Chemours facility concluded that they planned to install controls for the compounds of interest, and as a result, the DAQ wanted to collect baseline atmospheric deposition data before controls were introduced. The DAQ started rapidly collecting wet deposition data since they were in need of immediate information. As stated in the previous presentation, the DAQ deployed rainwater collection equipment at multiple temporary sites in January to obtain samples for laboratory testing. The DAQ is working on creating a technical report that will summarize the collected rainwater samples, the facility's production data, and meteorological data associated with particular events.

The January 28th and 29th rainwater sample had GenX values ranging from a non-detect to 630 parts per trillion, while the February 4th and 5th rain event had values in all areas ranging from 9.98 parts per trillion to 286 parts per trillion. Sampling during the week of February 28th in intervals ranging from three, five, and seven miles had GenX values ranging from 45 parts per trillion to 810 parts per trillion. The DAQ relies on their meteorologists to determine which direction rain events will predominate and where to deploy the sampling containers. There was the potential for higher concentrations to have been detected if the DAQ fanned the samples more to the east, but it is uncertain if it would have significantly changed the results. The March 10th through 12th rain event was sampled with containers under vegetation and in the open. Containers in the open atmosphere had concentrations ranging from 5.5 to 17.5 parts per trillion, while samples under vegetation had concentrations ranging from 435 to 8340 parts per trillion. The results indicate the potential "wash out" of dry deposition on vegetation. On April 26th and 27th, the DAQ fanned samples to the north in a 21-mile radius. The concentrations of material ranged from a non-detect to 147 parts per trillion.

The DAQ initially made agreements with local landowners and created four source-oriented monitors to collect ambient samples. The network contains two sites southwest of the facility and two northeast of the facility. Temporary sampling was still being conducted before the permanent network was activated to allow for larger datasets. One additional permanent site was added west of the Chemours facility in May 2018. It is important to note that background sites in Asheville, Raleigh, Candor, and Wilmington will also be monitored for PFAS and GenX. Sampling is already being conducted in Raleigh, which had a non-detect for the contaminants of interest. During the week of April 3rd, two stations were replaced with wet and dry deposition monitors; one to the northeast and one to the southwest. The wet component of the sampler contains a lid that will open to expose the sampler when precipitation occurs, while the dry component is open to the ambient conditions when precipitation is not occurring. The dry container will have 600 milliliters of PFAS-free water added when it is collected in order to make it suitable for laboratory sampling.

The DAQ is combining analysis and meteorological data for the week of June 5th. The DAQ is attempting to make sense of the data and combine process data for the week long meteorological patterns

Moving forward, the DAQ is moving quickly to add air pollution controls to the facility that will eliminate or significantly reduce the compounds of interest. It is also important to understand the potential secondary impacts of adding the controls to reduce PFAS and if they generate solid, liquid, or atmospheric waste. Method development for other PFAS compounds is being conducted and is a laborious process. The air sample must be collected in a representative fashion from the emission source so that no biases are formed. The DAQ is sharing and obtaining information from neighboring states in order to conduct as much outreach as possible. Atmospheric fate for the contaminants of interest is a concern in terms of secondary formation, conversions, and the ultimate fate.

As a summary, (1) the measured air emissions of GenX compounds are significantly higher than previously reported; (2) the DAQ has measured GenX deposition through rainfall 21 miles from the facility; (3) evidence of atmospheric deposition for GenX shows a geographic footprint similar to the detection of GenX in groundwater samples; (4) the DAQ wants to know the inhalation risks associated with the compounds of interest, and the North Carolina Secretaries' Science Advisory board is diligently working on developing them; and (5) a carbon adsorber trial was approved by the DAQ, which is estimated to control approximately 40 percent of facility-wide GenX.

On April 6, 2018, the DAQ issued a 60-day notice of intent to modify Chemours' air permit. This requires a demonstration that emissions of GenX compounds do not or will not cause or contribute to violations of groundwater rules. The science and collected data to date provided enough information to pursue the action. On April 9, 2018, the DAQ amended the complaint and motion for preliminary injunctive relief to address air emissions contributions to the groundwater violations. Later, on April 27, 2018, Chemours responded to the 60-day notice and committed to install and operate a regenerative thermal oxidizer (RTO) by 2020. The RTO is expected to reduce GenX emissions by 99 percent.

On June 11, 2018 the Department of Environmental Quality (DEQ) proposed a court order to require reductions of air emissions due to groundwater impacts. The 30-day comment period ended on July 11, 2018. The order requires the facility to reduce facility-wide air emissions of GenX compounds by at least 97 percent by August 31, 2018, with a 99 percent reduction by December 31, 2019.

Chairman Meiburg asked if there were any other questions. No Questions were identified.

Discussion:
EMC Chairman Solomon asked whether there are other locations in the state where methods testing is in concentrations of parts per trillion and if it is a common occurrence. Deputy Director Pjetraj specified that the Chemours facility is the only location where testing is being performed in parts per trillion since it is the only facility believed to emit GenX. Part of the methods development for air sampling includes capturing a representative air sample, not changing its chemistry, and transporting it to a laboratory for quantification. The laboratory analysis must be performed in such a way to ensure that they can measure in low concentrations.

EMC Chairman Solomon asked whether other facilities have conducted emissions testing in parts per trillion for similar compounds, such as PFOA. Deputy Director Pjetraj noted that no other facilities are testing for similar compounds at this time.

Commissioner Pettus asked for clarification pertaining to when the DAQ started deposition modeling and emissions testing. Deputy Director Pjetraj specified that the DAQ started initial modeling in the fall of 2017 after receiving information of contaminated wells that were across the Cape Fear River and/or upgradient of typical groundwater flows. The DAQ started deposition modeling in order to determine the potential area and extent for deposition. The DAQ required the facility to develop test methodologies in the fall of 2017 and the facility began shake-down testing on January 9th and 12th. Full scale testing began the week of January 22nd and split samples were submitted for independent assessment by EPA. The first four sets of source tests are posted on the Department's website at: https://deq.nc.gov/news/hot-topics/genx-investigation/investigations-and-enforcement-actions.

Chairman Meiburg asked whether the original emissions estimates reported to the DAQ were only for GenX or for GenX and other PFAS's. Deputy Director Pjetraj affirmed that the original estimates were only for GenX compounds. It is important to note that there are a few other compounds that are considered to be GenX based on their form. Chairman Meiburg asked whether all the emissions estimates were an "apples to apples" comparison. Deputy Director Pjetraj affirmed that the estimates were an "apples to apples" comparison. Chairman Meiburg

wanted clarification as to whether the DAQ is asserting that the emissions estimates increased by two orders of magnitude. Deputy Director Pjetraj affirmed that was the case.

EMC Chairman Solomon asked why there was an inconsistency in the presentation for significant digits and if it extended to the actual sampling data. Deputy Director Pjetraj specified that the actual sampling data contains significant figures and the issue was a matter of displaying the data in a presentation. EMC Chairman Solomon noted that the reasoning for his question was to ensure accuracy amongst test methods and various uncertainties.

Commissioner Deerhake asked whether the concentrations of GenX in the presentation represent the cumulative over a specific timeline. Deputy Director Pjetraj affirmed that the concentrations represented in the presentation are cumulative. For example, during the week of February 28th, the concentrations represent the time from when the container was deployed during a rain event to when an aliquot was sent for analysis after the precipitation ceased. Commissioner Deerhake asked whether measures were taken to prevent the evaporation of potential volatile compounds. Deputy Director Pjetraj stated that it is the DAQ's understanding that the compounds of interest are not readily volatile and are highly soluble in water. Commissioner Deerhake whether the five-year modeling of deposition was in agreeance with the emission estimate of 2758 lb/year. Deputy Director Pjetraj specified that the initial modeling runs were based on the initial emissions estimates. The DAQ questioned why contaminated groundwater wells appeared at larger than modeled distances since the footprint was small. This caused the DAQ to require source testing and the results indicated higher levels of emissions. Director Abraczinskas added that the initial modeling was conducted to determine the area of maximum impact for the Division of Waste Management to establish a radius beyond the facility.

Chairman Meiburg asked for clarification regarding the potential "wash out" events; specifically, as to whether dry deposition is deposited on plant surfaces and gets washed off during precipitation events, thus making the concentrations higher. Deputy Director Pjetraj affirmed that was the case.

Chairman Meiburg noted that he does not want to make conclusions, but it is intriguing how the concentrations of GenX plummeted after the carbon absorbers were installed. Deputy Director Pjetraj specified that while the current data is not a predictor, the DAQ is hopeful that it will reduce concentrations. Also, the DAQ still needs to couple the concentrations with process-level data. Chairman Meiburg asked whether the DAQ had baseline data from samples across the state. Deputy Director Pjetraj noted that the Raleigh site has baseline data, but the other sites are still being set up.

Commissioner Deerhake asked how the presented data corresponded to the facility's operating times since some facilities have one- to two-week shutdown periods in the summer. Deputy Director Pjetraj noted that the primary shutdown period for Chemours facility is in October. It is believed the facility was operating when the samples were collected. However, it is a matter of understanding which processes and chemical campaigns were operating. The DAQ will match the received analyses week-by-week with the facility's operations.

Chairman Meiburg asked whether the DEQ's court order would accelerate the installation and operation of the RTO. Deputy Director Pjetraj affirmed that was the case.

Commissioner Deerhake complimented the DAQ for the presentation's completeness and thoroughness in such a short timeframe. The attention and level of detail given to the GenX topic is a great example for what can also be accomplished for nitrogen deposition in eastern North Carolina. It would be a simpler and much more affordable effort to monitor the nitrogen species of interest that are impacting water quality while monitoring for GenX.

EMC Chairman Solomon asked for a ballpark figure of many glider vehicles and how large the market is in North Carolina. Director Abraczinskas stated that the DAQ had a preliminary estimate that two percent of the source type 61 and 62 vehicles are affected, but would like to refine the number. EMC Chairman Solomon noted that he

does not like percentages and wanted the number of affected vehicles. Director Abraczinskas specified that while he does not have the exact number, he will follow-up with the estimated number of glider vehicles.

Commissioner Carter asked where the engines of the glider vehicles come from. Director Abraczinskas noted that the engines come from a wrecked vehicle but the engine was salvageable.

Commissioner Deerhake specified that EPA had a meeting on PFAS's and someone from the Department attended. She wanted the Director to report on the meeting. Director Abraczinskas specified that Assistant Secretary Sheila Holman attended the meeting and deferred his answer to her update at the EMC meeting the following day.

Chairman Meiburg noted that the California light duty vehicle standards are still there. He also noted that Virginia has joined other states in adhering to the California standards. There is ongoing discussion which may be affected by the resignation of Administrator Pruitt in regard to the California tailpipe standards. Director Abraczinskas noted that it appears to be a dynamic issue at the federal level and the DAQ will follow it.

Motion:
No motion required.

JULY EMC AGENDA ITEMS

None.

INFORMATION ITEMS

Agenda Item #10, Director's Remarks
Director Abraczinskas provided an ozone season update and noted that North Carolina observed 12 ozone exceedances over the course of ten individual days. However, there were no violations of the 2015 ozone national ambient air quality standards (NAAQS).

The 2015 ozone NAAQS infrastructure state implementation plan (iSIP) deadline is approaching in October 2018. One element of the iSIP is the transport analysis showing North Carolina does not contribute ozone pollution to downwind nonattainment or maintenance issues pursuant to Clean Air Act Section 110(a)(2)(D)(i). This is a topic that was discussed before the AQC and EMC in previous meetings, but the DAQ is pleased that preliminary modeling indicates North Carolina does not contribute to downwind nonattainment or maintenance areas. The state's contribution appears to be far below the threshold used to conduct the analysis. There may be a maximum contribution of 0.4 parts per billion, while the threshold is 1 parts per billion.

Director Abraczinskas noted that Sushma Masemore had an outstanding presentation on greenhouse gas measures at the May AQC meeting. She noted during the presentation that the DAQ is in the process of creating a comprehensive greenhouse gas inventory showing trends from 1990-2017. There will also be emissions projections up to 2030. Director Abraczinskas noted that he reviewed the document and believes that Sushma and other DAQ staff did an outstanding job.

Per request of the AQC to provide periodic updates for the startup, shutdown, and malfunction rule's adjusted effective date, Director Abraczinskas specified that the policy issue at the federal level is starting to move forward at EPA.

On Friday, July 6, 2018, EPA issued a conditional no action assurance letter pertaining to small manufacturers of glider vehicles. This is an issue that the DAQ is closely following since glider vehicles are made from new model-year glider kits that are sold without the drivetrain. Old or rebuilt engines are placed into the kits and sold as a

new vehicle. The emissions controls associated with the engine are linked to the original model year of the engine. This has the possibility to increase NOx and fine particle emissions in sensitive areas of the state, such as the Metrolina area for ozone. The DAQ is assessing technological and policy perspectives to address the issue as it forms.

MEETING ADJOURNMENT

Chairman Meiburg asked for additional questions or comments, and upon hearing none, noted that the next meeting of the AQC would be September 12, 2018. Chairman Meiburg adjourned the meeting.